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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/602,515      | 06/23/2000  | Leonard J. Testa     | 4675-008            | 9084             |

4678 7590 07/10/2006

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| EXAMINER |
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VAN DOREN, BETH

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

3623

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/602,515             | TESTA, LEONARD J.   |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Beth Van Doren         | 3623                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/27/2006 has been entered.
2. The following is a non-final office action. A preliminary amendment was filed 05/12/2006. Claims 1-54 have been canceled. Claim 55 has been added. Claim 55 is pending.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hillier et al.

(Introduction to Operations Research).

As per claim 55, Hillier et al. teaches a method of scheduling a plurality of time dependent tasks comprising:

entering a plurality of tasks to be scheduled (See pages 836-9 and 843, which discloses planning tasks);

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considering the attributes of size, iterations, and efficiency allowed to generate the schedule (See pages 839 and 843);

generating a small number of schedule permutations of the plurality of tasks to be scheduled using an enumerative brute force method (See pages 837-9, which disclose generating a plan for a small problem with few policies);

estimating size, number of iterations, and efficiency to generate all possible schedule permutations for the plurality of tasks to be scheduled (See pages 839 and 843);

determining whether the size, number of iterations, and efficiency is greater than the maximum allowed to generate the schedule (See pages 839 and 843);

generating a schedule using the enumerative brute force method if the estimated size, number of iterations, and efficiency required is not greater than the maximum amount allowed to generate the schedule (See pages 836-9 and 843, wherein the schedule is generated using brute force when it is small enough and feasible to do so);

scheduling a small number of tasks using a deterministic programming method if the estimated size, number of iterations, and efficiency required to generate all possible schedule permutations is greater than the maximum amount allowed to generate the schedule (See pages 839-841 and 843, wherein linear programming with deterministic policies is employed);

estimating size, number of iterations, and efficiency required to generate a complete schedule of the plurality of tasks to be scheduled using the deterministic programming method (See pages 839 and 843);

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determining whether the estimated size, number of iterations, and efficiency required to generate the complete the schedule is greater than the maximum amount of time allowed to generate the schedule (See pages 839 and 843);

generating a complete schedule of the plurality of tasks to be scheduled using the deterministic programming module if the estimated amount of time required to generate the complete schedule is not greater than the maximum size, number of iterations, and efficiency allowed to generate the schedule (See pages 839-843, wherein a schedule is generated using deterministic linear programming if do so is feasible); and

generating a schedule using a genetic method if the estimated size, number of iterations, and efficiency required to generate the complete schedule is greater than the maximum size, number of iterations, and efficiency (See pages 843-845 and 850, wherein the schedule is generated using an algorithm that is iterative and evolutionary, and searches for an approximate optimal solution by testing various solutions iteratively).

However, while Hillier et al. discusses size, number of iterations, and efficiency considerations when choosing between enumeration, deterministic linear programming, and genetic type heuristics such as policy improvement algorithms, Hillier et al. does not expressly disclose entering or estimating based on time or memory space requirements.

Hillier et al. discloses size, number of iterations, and efficiency considerations when choosing between enumeration, deterministic linear programming, and genetic type heuristics such as policy improvement algorithms. Hillier et al. specifically discusses on page 843 that exhaustive enumeration is quick and straightforward for smaller problems and Linear programming (deterministic) is good solve larger problems than enumeration, especially with the

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software applications available. Further, Hillier et al. states that heuristic algorithms like policy improvement algorithms are efficient because it reaches an optimal solution in a smaller number of iterations (far fewer than deterministic and enumeration). It is old and notoriously well known that time is a key performance measure of quickness and efficiency. Further, it is old and well known that less iterations (i.e. less computational data) would require less memory to perform and store such data. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to enter or estimate which model of Hillier et al. to use based on time and memory space requirements in order to more efficiently find an optimal solution using the most appropriate means. See pages 839 and 843.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Crowder et al. (U.S. 6,606,529) discloses algorithms to schedule events through partition, artificial intelligence, and optimizers.

Yoshizawa et al. (U.S. 5,442,561) discloses scheduling with limitations of computation time and memory.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beth Van Doren whose telephone number is (571) 272-6737. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*bvd*  
bvd

June 30, 2006

*Beth Van Doren*  
Beth Van Doren  
AU 3623